Solve each equation.

1. $-4(3-x)=8$

2. $3x-2(x+1)=0$

3. $3x+14=4(x+3)$

4. $\frac{x+2}{5}=\frac{x-8}{3}$

5. $\frac{6}{5}=\frac{x}{9}$

6. $\frac{6}{b}=\frac{3}{8}$

7. $\frac{x+1}{2}=\frac{3}{5}$

Solve each system of equations using the method of your choice.

8. $\begin{cases}-2x+y=8\\ y=-3x-2\end{cases}$

9. $\begin{cases}5x+4y=2\\ 4x+2y=-2\end{cases}$

10. $\begin{cases}2x-7y=-5\\ y=\frac{7}{2}x+2\end{cases}$

Factor each polynomial completely.

11. x^2-x-72

12. $a^2-10a+24$

13. $10m^3n^2-15m^2n$

14. $x^2+12x+36$

15. x^2-64

16. $3y^2-75$

Determine each of the following:

17. Write an expression for the perimeter of a rectangle with length *l* = 2x + 3 and width w = x – 2

18. Write an expression for the area of a square with side s = 2x + 5

19. The length of each leg of an isosceles right triangle is 4 cm. What is the length of the hypotenuse?

Simplify each of the following.

20. $(-3x^2+4x-7)+(2x^2-7x+8)$

21. $(-4a^3+2a^2-a-7)-(3a^3-2a^2-a+8)$

22. $(x+7)(x+5)$

23. $-3xy^3(x-2y)$

24. $(15a^4b^2c)^0$

25. $(8a^3b^2)(2a^{-4}b^5)$

26. $\frac{3x^3y^2}{6x^{-2}y^5}$

27. $(x + 6)^2$

Graph each of the following on graph paper or create your own grid.

28. $y = \frac{-3}{4}x + 4$

29. $y = -3x$

30. $2x + 3y = 9$

Determine each of the following:

31. Determine the slope of the line containing the points (6, -2) and (-1, 5).

32. Determine an equation for a line with slope $\frac{1}{2}$ and y-intercept at (0, -3).

33. Determine the equation of a line that passes through the points (3, 8) and (1, 4).

Solve each inequality and graph the solution set.

34. $2x - 3 > 11$

35. $-3x \leq 15$

36. $y > 2x - 5$

37. $2x + 5y \leq -10$

Simplify each radical expression.

38. $\sqrt{75}$

39. $\sqrt{8}\sqrt{18}$

40. $\frac{\sqrt{96}}{\sqrt{8}}$

41. $\sqrt{144}$

Write each number in decimal notation.

42. 1.86×10^3

43. 8.46×10^{-4}

44. 5.5×10^0

Write each number in scientific notation.

45. 42,000,000

46. 0.00000119

47. $(3.5 \times 10^3)(2 \times 10^6)$

48. $\frac{6.4 \times 10^{12}}{4 \times 10^7}$

Evaluate.

49. $x\left(\frac{y}{2}+3z^2\right)-2x$ *if* $x=\frac{1}{2}, y=4, z=-2$

50. $12a - 4a^2 + 7a^3$ if $a = -3$

51. $\frac{-b+\sqrt{b^2-4ac}}{2a}$ *if* $a=1, b=-4, c=-21$

52. $A=P\left(1+\frac{r}{n}\right)^{nt}$ if $P=650, r=6\%$, $n=2, t=15$

Simplify each expression. Answers should be written using positive exponents.

53. $g^5 \bullet g^{11}$ _____

54. $(b^6)^3$ _____

55. w^{-7} _____

56. $\frac{y^{12}}{y^8}$ _____

57. $(3x^7)(-5x^{-3})$ _____

58. $(-4a^{-5}b^0c)^2$ _____

59. $\frac{-15x^7y^{-2}}{25x^{-9}y^5}$ _____

60. $\left(\frac{4x^9}{12x^4}\right)^3$ _____

Rewriting Formulas and Equations. Simplify both sides of the equations to isolate the variable you are solving for.

Solve the equation for y.

61. $8y - 3x = 18$

62. Solve for C, $F=\frac{9}{5}C+32$

Solve each inequality. Graph the solutions on a number line.

63. $12 - 3(6x - 2) > 4(x + 5) - (9 - x)$

64. $5x - 11 - x > 2x + 23$

Functions and Relations:

65. Is the relation {(–2, 5), (–1, 5), (–1, 4), (–1, –3), (–2, 0)} a function? Explain.

66. Find the domain and range. $\left\{\left(-1, \frac{1}{2}\right), \left(-\frac{1}{2}, -1\right), \left(\frac{3}{2}, 0\right), \left(2, \frac{3}{2}\right)\right\}$

67. Graph the equation $6x + 6y = 30$ by finding the intercepts.

68. Graph the equation $-3x - y = 6$.

69. Suppose $f(x) = 4x - 2$ and $g(x) = -2x + 1$.
Find the value of $\frac{f(5)}{g(-3)}$.

70. For $f(x) = 5x + 1$, find $f(-4)$.

Solve the quadratic equation:

71. $x^2 + x - 42 = 0$

72. $(x-2)^2 = 25$

73. $6x^2 - 13x = -6$

Simplify each radical. Be sure the answer is in simplest form.

74. $\sqrt{32}$

75. $\sqrt{300}$

76. $\sqrt{48}$